


FRTB Internal Model Approach

Some new challenges on the route towards model activation

SUPERVISION, RISKS & PROFITABILITY 2020

Niccolò Cottini
Group Financial Risk Models
UniCredit SpA

September 2020

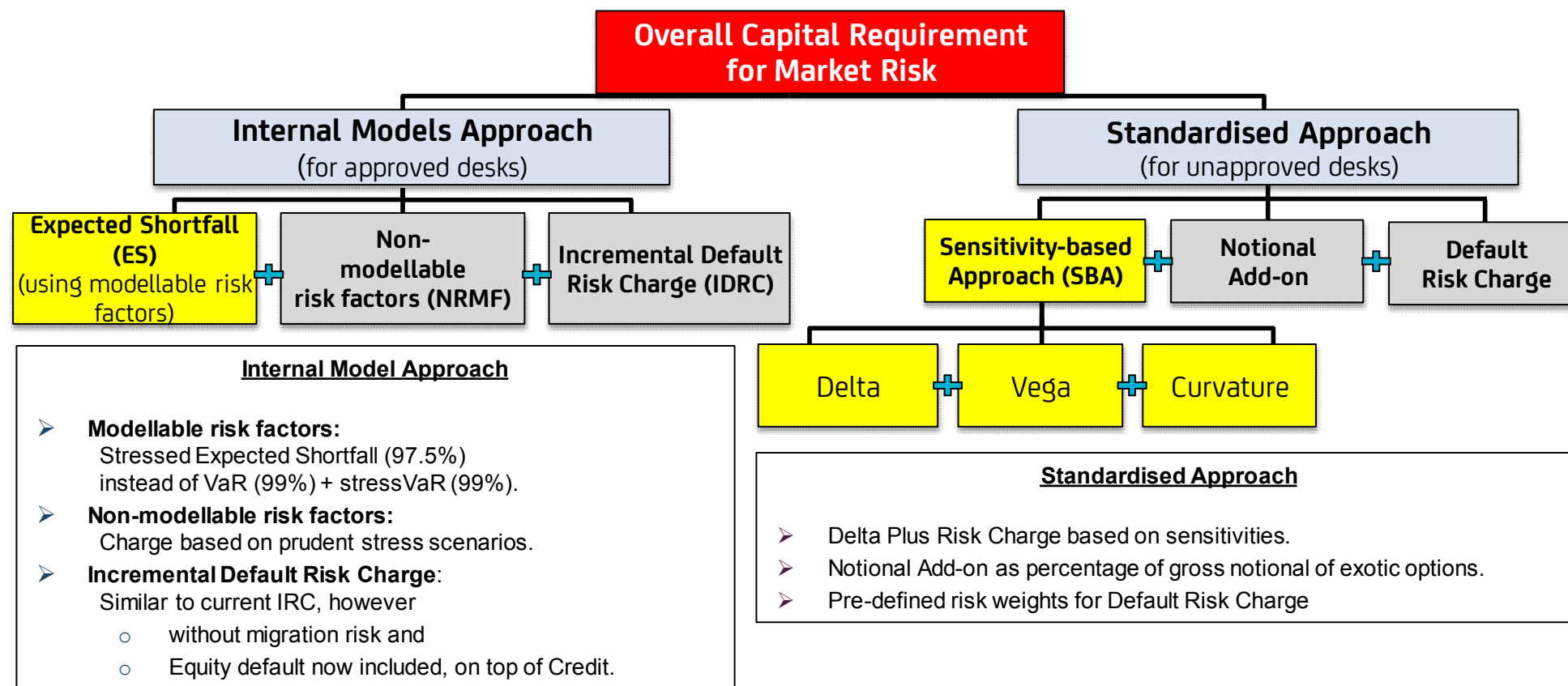
Banking that matters. |  **UniCredit**

Agenda

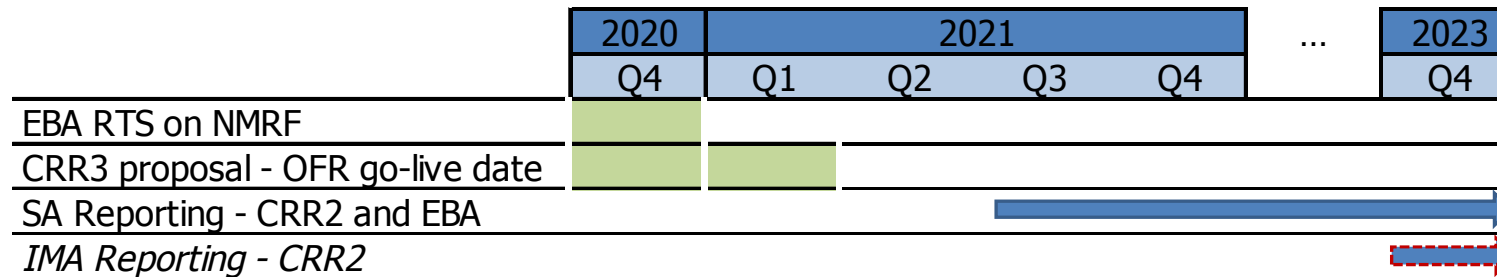
- New Market Risk Measures and FRTB IMA timeline
- The challenges of use test under its traditional definition
- The challenges of the parallel-run



Overview of New Market Risk Measures



FRTB IMA timeline



Italic for assumptions

- EBA RTS on NMRF charge, i.e. the last significant methodological standard, is expected for Q4 2020.
- CRR3 proposal, with the indication of go-live date for calculation of OFR, is expected for Q4/Q1 as well.
- Regulation (EU) 2019/876 (**'CRR2'**) introduces the first elements of FRTB into the prudential framework of the EU. Despite not yet being binding in terms of own funds requirements (**OFR**), the framework is implemented by means of a **reporting requirement**.
- IMA reporting standards by EBA not defined. Draft, issuance and enforcement is likely to take at least 1.5Y



The challenges of use test under its traditional definition (1/3)

- Capitalization through IMA derives from the sum of three measurements: **ES**, **NMRF** and **IDRC**.
 - A direct use of IMA metrics to steer business (i.e. “use-test” in its traditional definition) is posing serious issues. Indeed, ES is
 - A. based on a subset of the risk-factors (**MRF**)
 - B. is computed on a **stressed window**
 - C. is over-riding risk factor covariance by limiting the amount of **diversification** ($\rho=0.5$) and scaling the variance of subsets of risk-factors on the basis of their **Liquidity Horizon**
 - A is the hardest constraint since figures produced only shifting a **subset of the risk-factors** (e.g. a portion of a curve, shifted ATM vol but not wings, ...) are difficult to relate to the economics in the market.
 - B is problematic in that it lacks the **pro-cyclicality** a steering metric needs to have, as the VaR behaviour over the COVID crisis is showing.
 - C introduces an **artificial covariance** structure that might be prudential for capital purposes, but that cannot be related to market dynamics. The same concern expressed on point A applies.
-



The challenges of use test under its traditional definition (2/3)

- As for the **NMRF** charge, it effectively consists of stress scenarios dislocating sub-portions of curves and surfaces in un-correlated ways, potentially generating **un-physical scenarios**.
 - E.g. a scenario where a central part of a curve is substantially shifted upwards and the rest is unchanged would of limited utility in estimating potential losses from a Desk.
- **IDRC** is perceived as an improvement over IRC from Basel 2.5, however the assumption that **maturity mismatches** between positions and hedges are preserved over the one year capital horizon is unrealistic
 - Misrepresentation of the riskiness of standard strategies using short dated Futures hedges for Bonds and rolling them monthly.
- **VaR** in FRTB is preserved for back-testing, however computed on MRF only. Concerns related to ES are also extended to this metric.



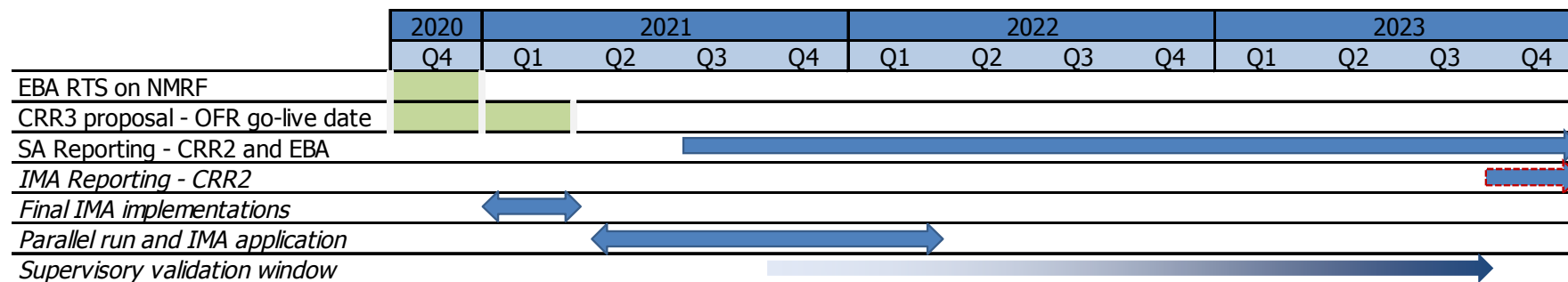
The challenges of use test under its traditional definition (3/3)

- The internal risk-measurement model used to steer business and for managerial reporting should be the same one used for prudential purposes, however **freed up of some of the constraints** introduced when determining **regulatory capital** calculation.
- A possible configuration could be as follows:
 - A VaR metric with all the risk-factors included, both Modellable and Non Modellable (i.e. the same set up used to produce RTPL)
 - The Stress testing framework used for NMRF, however based on physical scenarios
 - IDRC, with potentially some milder assumptions on the roll-over risk
- Such set up would seem compliant* for fulfilling the use test, in that it would be exactly **the same internal risk model**, however used under **two different configurations** so to serve two different purposes.

* See Article 325bi



FRTB IMA timeline - Extended



Italic for assumptions and fast tracks

- IMA requires an application and supervisory validation.
 - Application package requires 1Y time series of IMA metrics
 - Given the complexity and the number of concurrent applicants, validation may likely happen over a ~2Y window.
- Go-live of IMA reporting requirements from CRR2 and OFR from CRR3 may be asynchronous.



The challenges of the parallel-run (1/3)

- Under assumed FRTB IMA timeline, a **parallel run** of new and current Internal Model would be required:
 - A. For 4 quarters**, to provide evidence on the IMA perimeter the bank is applying for.
 - B. For 6 quarters**, to support the validation until the earliest assumed date for IMA reporting go-live
 - C. For an unknown duration** during the reporting phase, until OFR from FRTB becomes binding and current Internal Model framework can decommissioned.
- During A and B, the parallel needs to be **daily** to build up the 1Y history required for application, to be able to show the model in operation during approval phase, to prove that the initial scope is still eligible.
- Running two risk systems in parallel, daily, for more than **10 quarters** is unprecedented and will pose a high pressure on the risk structures, increasing the related IT costs.
- Additionally, during A and B the trading book structure should be **static**, i.e. the desk selected for IMA should not undergo any significant structural changes.



The challenges of the parallel-run (2/3)

- Even the simplest desk changes require re-aggregation capabilities to the risk infrastructure, which are needed only to meet FRTB IMA compliance
 - Moving one sub-portfolio of Desk1 under Desk2
 - ES and VaR need to be re-aggregated over the quarter, requiring all the simulated distributions to be stored at granular level
 - MonteCarlo simulation for IDRC would need to be recomputed over the quarter
 - Merging Desk1 under Desk2
 - Also requiring storage of all the Desk underlying distributions, to be able to re-aggregate non additive measures
 - Creation of a New Desk
 - Unclear how to enter into this discussion once application is filed.



The challenges of the parallel-run (3/3)

- While it is the **approval at Desk level** that originally poses all these constraints, still running two systems in **parallel** for so many quarters makes the resulting situation even more challenging.
- Given the considerations above, there is still room for some ease to the challenges
 - Full parallel of 1Y required only for application
 - Only daily Backtesting and PLA results during approval process
 - IMA Reporting phase – before OFR go-live – to be based on monthly runs, rather than daily

